

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

**LISTING OF CLAIMS:**

1. (Previously Presented) A variable inner volume ratio-mode inverter screw compressor comprising:
  - a variable inner volume ratio valve changing completion time of a compression step in a screw compression section to make inner volume ratio variable;
  - an electric motor rotationally driving the screw compression section;
  - an inverter controlling rotational frequency of the electric motor corresponding to a load and detecting driving voltage and driving current of the electric motor; and
  - a control section controlling an opening degree of the variable inner volume ratio valve based on suction side pressure and discharge side pressure of the screw compression section and rotational frequency of the electric motor, the control section including a revolution number output section and an optimum inner volume ratio output section,
    - the revolution number output section calculating a rotational frequency of the electric motor to obtain required freezing capability based on temperature detected by a temperature sensor and outputting a signal representing the rotational frequency to the inverter and the optimum inner volume ratio output section, and
    - the optimum inner volume ratio output section making a signal to control the opening degree of the variable inner volume ratio valve based on the suction side pressure, the discharge side pressure, the signal representing the rotational frequency, the driving voltage and the driving current of the electric motor, and a position of the variable inner volume ratio valve.
2. (Previously Presented) A variable inner volume ratio-mode inverter screw comprising:
  - a variable inner volume ratio valve changing completion time of a compression step in a screw compression section to make inner volume ratio variable;
  - an electric motor rotationally driving the screw compression section;

an inverter controlling rotational frequency of the electric motor corresponding to a load and detecting driving power of the electric motor; and

a control section controlling an opening degree of the variable inner volume ratio valve based on suction side pressure and discharge side pressure of the screw compression section and rotational frequency of the electric motor, the control section including a revolution number output section and an optimum inner volume ratio output section,

the revolution number output section calculating a rotational frequency of the electric motor to obtain required freezing capability based on temperature detected by a temperature sensor and outputting a signal representing the rotational frequency to the inverter and the optimum inner volume ratio output section, and

the optimum inner volume ratio output section making a signal to control the opening degree of the variable inner volume ratio valve based on the suction side pressure, the discharge side pressure, the signal representing the rotational frequency, the driving power of the electric motor, and a position of the variable inner volume ratio valve.